AMENDMENTS TO THE CLAIMS

1-109. (Canceled)

110.   (New) A method for modifying the function of an N-methyl-D-aspartate receptor associated with a neurological disorder in a hippocampal region of a subject comprising:

administering a vaccine into the circulatory system of the subject comprising a therapeutically effective amount of a peptide antigen derived from an N-methyl-D-aspartate receptor subunit 1 (NMDAR1)

wherein the peptide antigen has an antigenic region of NMDAR1 selected from the group consisting of an N-terminal extracellular region, a preM1 region, an M4n region, an M3c region, and a region of an extracellular loop between M3 and M4, and

wherein the antigen elicits the production of antibodies that pass into the central nervous system of the subject and interact with N-methyl-D-aspartate 1 receptors located on neuronal cells in the hippocampus of the subject.

111.   (New) The method of claim 110, wherein the antibodies pass into the central nervous system upon a compromise of the blood-brain barrier.

112.   (New) The method of claim 111, wherein the blood-brain barrier is compromised by injury, disease or excessive neuronal activity.

113.   (New) The method of claim 110, wherein the peptide comprises the M3c region.

114.   (New) The method of claim 110, wherein the peptide comprises the M4n region.

115.   (New) The method of claim 110, wherein the peptide comprises the extracellular loop between M3 and M4.

116.   (New) The method of claim 110, wherein the peptide comprises a region of an extracellular loop between M3 and M4.

117.   (New) The method claim 110, wherein the antibodies interact directly with the receptors modify the function of the receptors, or indirectly modify the function of a process involving the receptors.

118.   (New) The method claim 117, wherein the antibodies interact with the receptors to ameliorate epilepsy or conditions associated with hippocampal dysfunction.